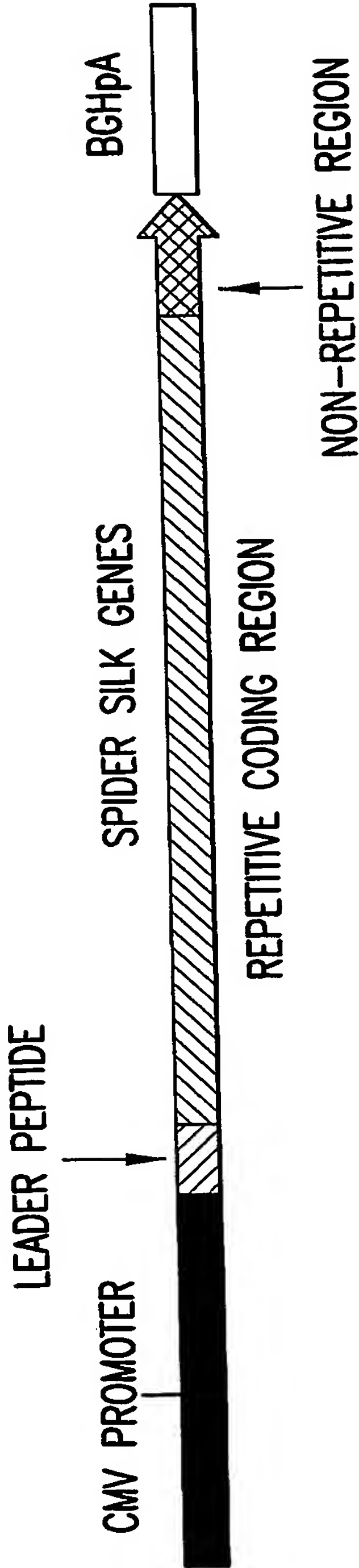


DNA EXPRESSION CONSTRUCTS USED TO PRODUCE RC-DRAGLINE SPIDER SILKS IN MAMMALIAN CELLS.



| SPIDER SILK GENES EXPRESSED | cDNA SIZE (kb) | NON-REPETITIVE 3' -END (kb) | "TAG" | PREDICTED RC--SPIDER SILK SIZE | |
|-----------------------------|----------------|-----------------------------|-------------|--------------------------------|-----|
| | | | | # AMINO ACIDS | kD |
| ADF-3 His | 1.7 | 0.3 | myc, His(8) | 677 | 63 |
| ADF-3 | 1.7 | " | - | 652 | 60 |
| ADF-33 | 3.4 | " | - | 1090 | 110 |
| ADF-333 | 4.7 | " | - | 1568 | 140 |
| MaSpII | 1.6 | " | - | 658 | 59 |
| MaSpI | 1.9 | " | - | 719 | 59 |
| MaSpI(2) | 3.6 | " | - | 1316 | 106 |

FIG.1

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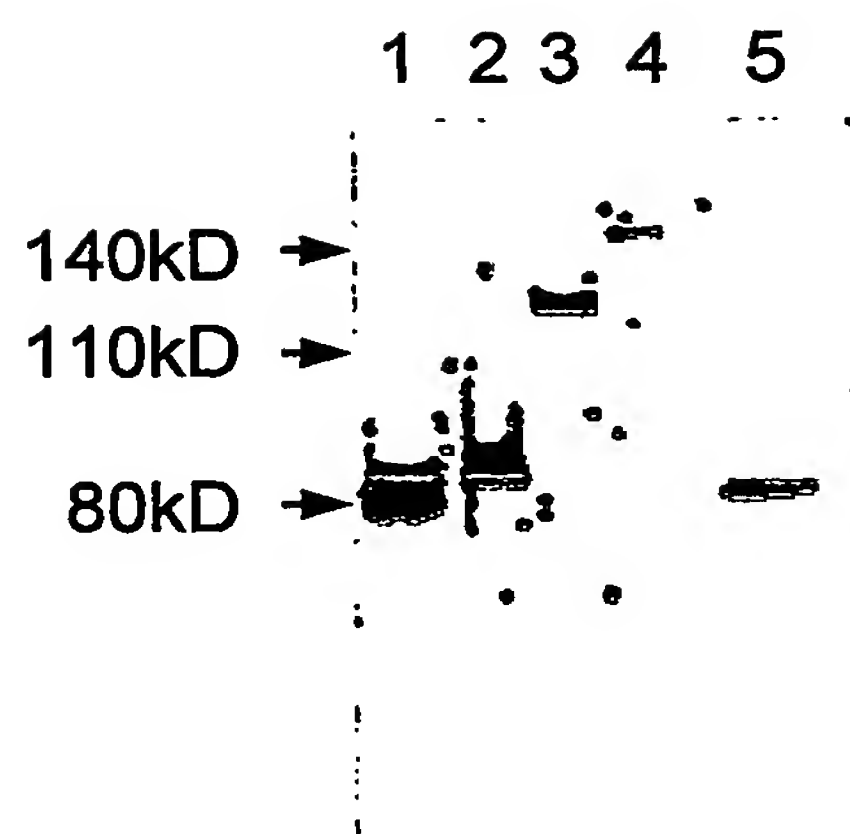


FIG.2A

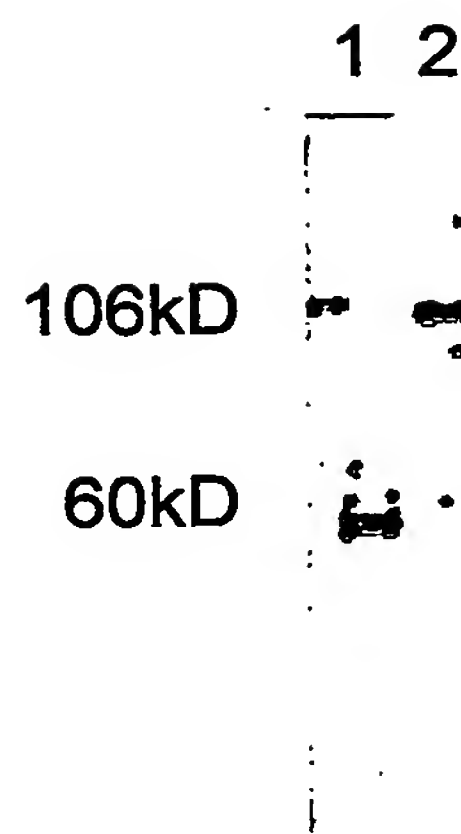


FIG.2B

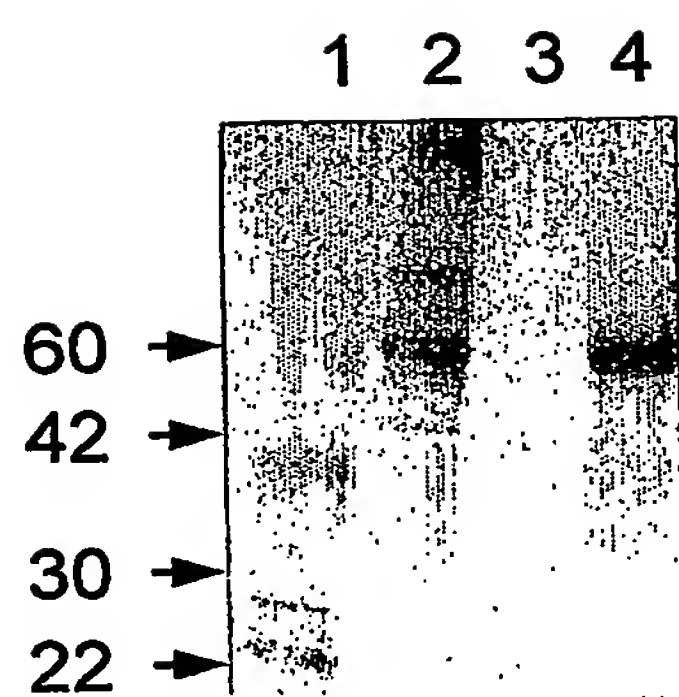


FIG.3A

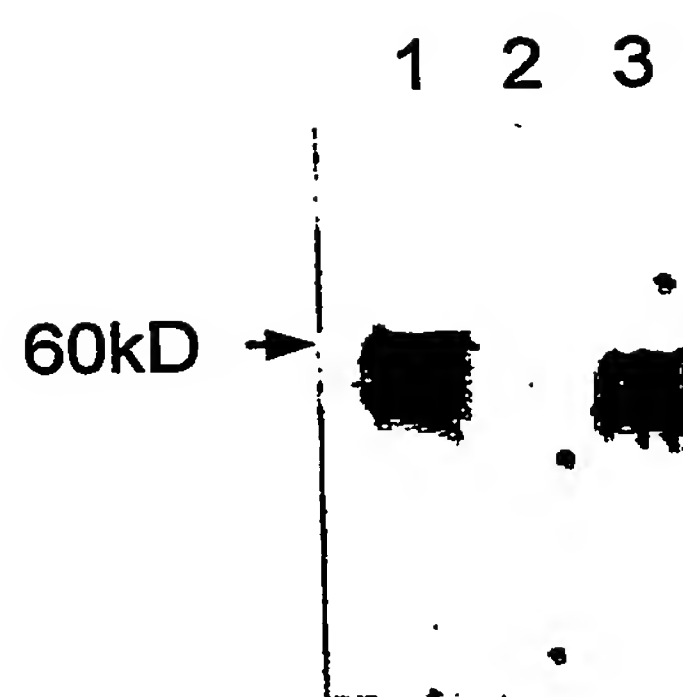


FIG.3B

THE STRUCTURE OF THE MULTIMERS

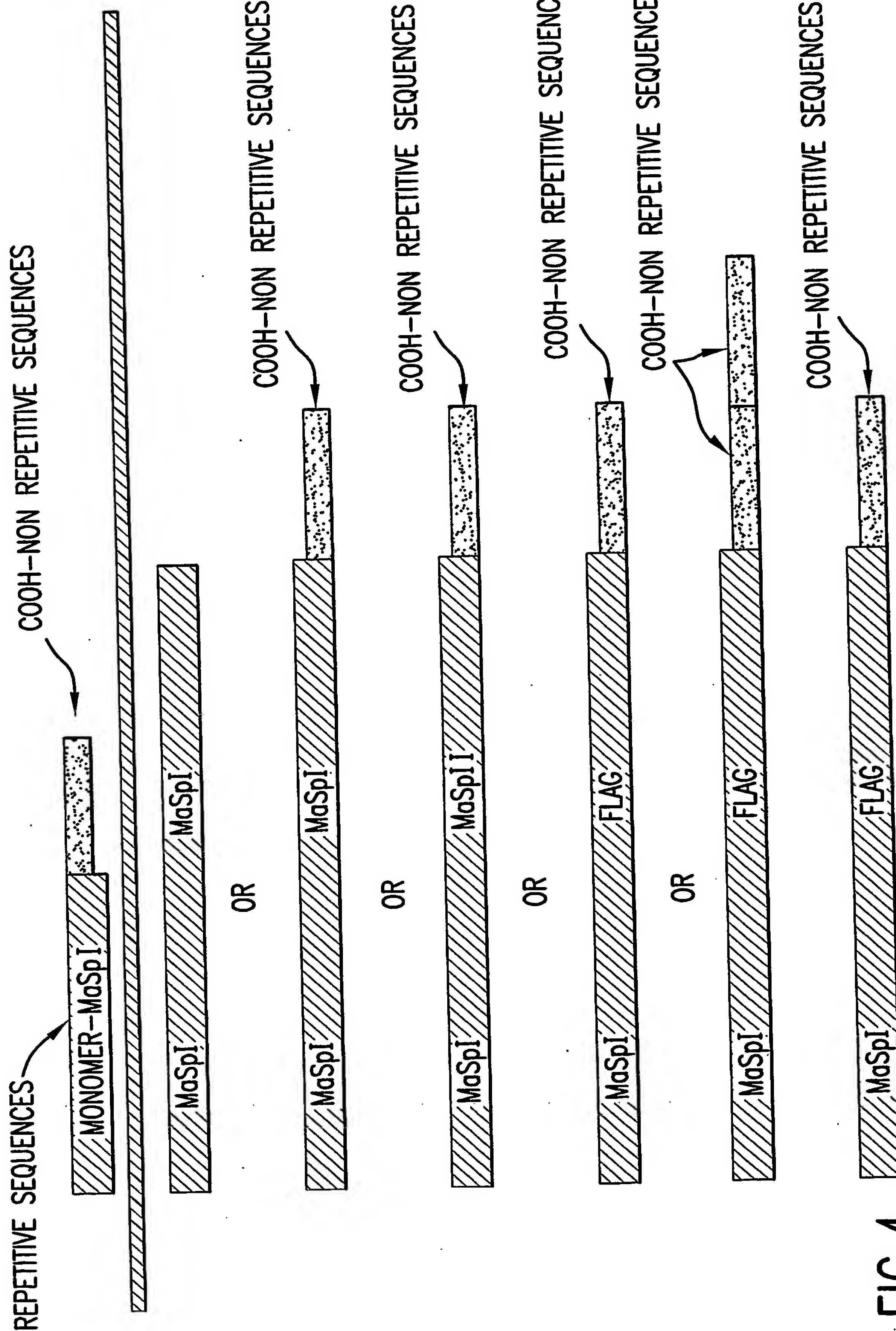


FIG. 4

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| SEQ | MoSp1_Translation (M4) | |
|---|------------------------|------------------------------|
| KEYWORD | PROTEIN | |
| ORIGIN | | |
| QGAGAAAAAA | GGAGQGGYGG | LGSQGAGRGG |
| QGAGAAAAAA | GGAGQGGYGG | LGSQGAGRGGGLGG |
| QGAGAAAAAA | GGVGQGG | LGGQGAG |
| QGAGAAAAAA | GGAGQGGYGG | LGSQGAGRGGSGG |
| QGAGAAAAAA | GGAGQGGYGG | LGSQGAGRGGGLGG |
| QGAGAAAAAA | GGAGQGGYGG | LGGQGAGQGGYGG LGSQGAGRGGGLGG |
| QGAGAAAAAA | GGAGQGG | LGGQGAG |
| QGAGAAAAAA | GGAGQGGYGG | LGSQGAGRGG |
| QGAGAAAAAA | VGAGQGGYGGQGAGQGGYGG | LGSQGAGRGGGLGG |
| QGAGAAAAAA | GGAGQGG | LGGQGAG |
| QGAGAAAAAA | GGAGQGGYGG | LGNQGAGRGG |
| QAAAAAAGGA | QGGYGG | LGSQGAGRGGGLGG |
| QGAGAAAAAA | GGAGQGGYGG | LGGQGAGQGGYGG LGSQGSGRGGGLGG |
| QGAGAAAAAA | GGAGQGG | LGGQGAG |
| QGAGAAAAAA | GGVRQGGYGG | LGSQGAGRGG |
| QGAGAAAAAA | GGAGQGGYGG | LGGQGVGRGG LGG |
| QGAGAAAA | GGAGQGGYGG | |
| VSGASAASAAASRLSSPQASSRVSSAVSNLVASGPTNSAAL SST I SNVVSQIGASNPGLSGCDVL I QALLEVVSAL I | | |
| QILGSSSIQGVNYGSAGQATQIVGQSVYQAL | | |

FIG.5

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| SEQ | MaSp2_Translation | | |
|--|-----------------------|-------|-------------|
| KEYWORD | PROTEIN | | |
| ORIGIN | | | |
| | PCGYGPGQQGPGGYGPGQQGP | SGPGS | AAAAAAAAAA |
| GPGGYGPGQQGPGGYGPGQQGPGRYGPGQQGP | | SGPGS | AAAAAA |
| GSGQQGPGGYGPRQQGPGGYGQGQQGP | | SGPGS | AAAASAAASA |
| ESGQQGPGGYGPGQQGPGGYGPGQQGPGGYGPGQQGP | | SGPGS | AAAAAAAA |
| SGPGQQGPGGYGPGQQGPGGYGPGQQGP | | SGPGS | AAAAAAAA |
| SGPGQQGPGGYGPGQQGPGGYGPGQQGL | | SGPGS | AAAAAA |
| GPGQQGPGGYGPGQQGP | | SGPGS | AAAAAAAA |
| GPGGYGPGQQGPGGYGPGQQGP | | SGAGS | AAAAAA |
| GPGQQGLGGYGPGQQGPGGYGPGQQGPGGY | | GPGS | ASAAAAAA |
| GPGQQGPGGYGPGQQGP | | SGPGS | ASAAAAAA |
| GPGGYGPGQQGPGGYAPGQQGP | | SGPGS | ASAAAAAA |
| GPGGYGPGQQGPGGYAPGQQGP | | SGPGS | AAAAAA |
| GPGGYGPAQQGP | | SGPGI | AASAASA |
| GPGGYGPAQQGPAGY | | GPGS | AVAASAGAGSA |
| GYGPGSQASAAASRLASPD SGARVASAVSNLVSSGPTSSAALSSVINSNAVSQIGASNPGLSGCDVLIQALLEIVSACV | | | |
| TILSSSSIGQVNYGAASQFAQVVGQSVLSAF | | | |

FIG.6

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Translation of AdfS (1-3410)

Universal code

Total amino acid number: 1130, MW-115213

Max ORF: 1-3270, 1090 AA, MW-110427

adf-3 TRANSLATION

ARA

| | | |
|--|-----------------------------------|------|
| | GSGQQGPGQQGPGQQGPGQQGP | YGPG |
| ASAAAAAA | GGYGP GSGQQGPSQQGPGQQGP | YGPG |
| ASAAAAAA | GGYGP GSGQQGPGGQGP | YGPG |
| SSAAAAAA | GGNGP GSGQQGAGQQGPGQQGPG | |
| ASAAAAAA | GGYGP GSGQQGPGQQGPGGQGP | YGPG |
| ASAAAAAA | GGYGP GSGQ-GPGQQGPGGQGP | YGPG |
| ASAAAAAA | GGYGP GSGQQGPGQQGPGQQGP | YGPG |
| ASAAAAAA | GGYGP GYGQQGPGQQGPGGQGP | YGPG |
| ASAASAAS | GGYGP GSGQQGPGQQGPGGQGP | YGPG |
| ASAAAAAA | GGYGP GSGQQGPGQQGPGQQGPGQQGPGGQGP | YGPG |
| ASAAAAAA | GGYGP GSGQQGPGQQGPGQQGP | YGPG |
| ASAAAGAA | GGYGP GSGQQGPGQQGPGQQGP | YGPG |
| ASAAAAAA | GQQGPGQQGPGQQGPGGQGR | YGPG |
| AASAASVS | GGYGPS | |
| SSVPVASAVASRLSSPAASSRVSSAVSSLVSSGPTKHALLSNTISSVVSQVSASNPGLSGCDVLVQALLEVVSALVSI | | |
| LGSSSIGQINYGASAQYTQMVGQSVAQALA | | |

FIG.7

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Translation of ADF-1

Fibroin (Araneus diadematus clone ADF-1 C-terminal fragment)

```
SEQ      1  HESSYAAAMA ASTRNSDFIR NMSYQMGRL SNAGAITEST ASSAASSASS
          51  TVTESIRTYG PAAIFSGAGA GAGVGVGGAG GYGQGYGAGA GAGAGAGAGA
        101  GGAGGYGQGY GAGAAAAAGA GAGAAGGYGG GSGAGAGGAG GYGQGYGAGS
          151  GAGAGAAAAA GASAGAAGGY GGGAGVGAGA GAGAAGGYGQ SYGSGAGAGA
          201  GAGAAAAAGA GARAAGGYGG GYGAGAGAGA GAAASAGASG GYGGGYGGA
          251  GAGAVAGASA GSYGGAVNRL SSAGAASRVS SNVAAIASAG AAALPNVISN
          301  IYSGVLSSGV SSSEALIQAL LEVISALIHV LGSASIGNVS SVGVNSALNA
          351  VQNAVAYAG
```

FIG.8

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Translation of ADF-2

Fibroin (Araneus diadematus clone ADF-2 C-terminal fragment) (9CI)(CA
INDEX NAME)

| | | | | | | |
|-----|-----|------------|------------|------------|------------|------------|
| SEQ | 1 | GSQGAGGAGQ | GGYGAGGGGA | AAAAAAVGA | GGGQGGLGS | GGAGQGYGAG |
| | 51 | LGGQGGASAA | AAAAGGQGGQ | GGQGGYGGLG | SQGAGGAGQL | YGAGQESAA |
| | 101 | AAAAAAGGAG | GGGQGLGAG | GAGQGYGAAG | LGGQGGAGQG | GGSGAAAAG |
| | 151 | GQGGQGGYGG | LGPQGAGGAG | QGGYGGSLQ | YGGQQAQAA | AASAAASRLS |
| | 201 | SPSAAARVSS | AVSLVSNGGP | TSPAALSSSI | SNVVSQISAS | NPGLSGCDIL |
| | 251 | VQALLEIISA | LVHILGSANI | GPVNSSSAGQ | SASIVGQSVY | RALS |

FIG.9

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Translation of ADF-4

Fibroin (Araneus diadematus clone ADF-4 C-terminal fragment) (9CI) (CA
INDEX NAME)

| | | | | | | |
|-----|-----|------------|------------|-------------|------------|------------|
| SEQ | 1 | AGSSAAAAAA | ASGSGGYGPE | NQGPSGPVAY | GPGGPVSSAA | AAAAAGSGPG |
| | 51 | GYGPENQGPS | GPGGYGPGGS | GSSAAAAAAA | ASGPGGYGPG | SQGPGPGGS |
| | 101 | GGYGPGSQGA | SGPGGPGASA | AAAAAAAAAAS | GPGGYGPGSQ | GPSGPGAYGP |
| | 151 | GGPGSSAAAA | AAAASGPGGY | GPGSQGPSGP | GVYGPGGPGS | SAAAAAAGS |
| | 201 | GPGGYGPENQ | GPSGPGGYGP | GGSGSSAAAA | AAAASGPGGY | GPGSQGPSGP |
| | 251 | GGSGGYGPGS | QGGSGPGASA | AAAAAASGP | GGYGPGSQGP | SGPGYQGPGS |
| | 301 | PGAYGPSPSA | SASVAASVYL | RLQPRLEVSS | AVSSLVSSGP | TNGAAVSGAL |
| | 351 | NSLVSQISAS | NPGLSGCDAL | VQALLELVSA | LVAILSSASI | GQVNVSSVSQ |
| | 401 | STQMISQALS | | | | |

FIG.10